

#14074

Hca 5th Land Farms

QRSPH W/65th AH

EATON

Hydraulics

Electronic Proportional (EP) Control for Heavy Duty Series 2 Piston Pumps

Model 33
Model 39
Model 46

Model 54
Model 64

1/5/07

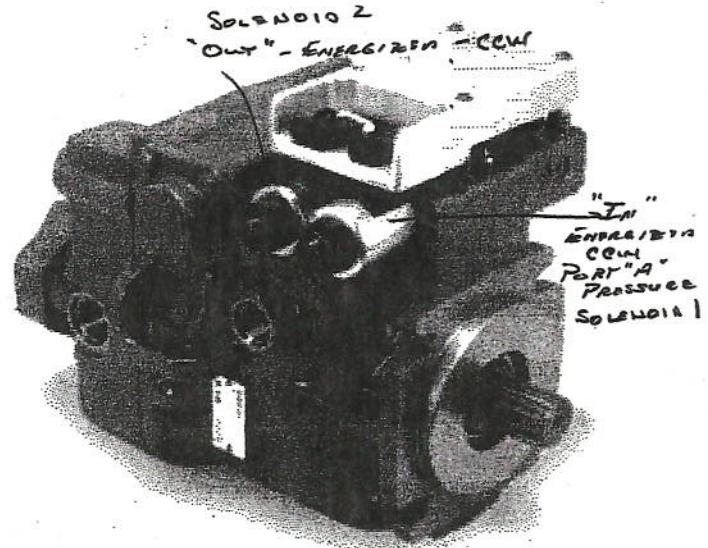
The Electronic Proportional (EP) Control is ideal for a wide range of mobile and industrial applications where electrical control of pump displacement is desired. Eaton's robust design incorporates an electronic module, proportional solenoids and a valve assembly.

Pump displacement is controlled by an input command signal which is converted into proportional current output by the electronic module. The proportional solenoid-actuated valve assembly then converts the current output into proportional pump displacement.

Designed to meet the rigorous duty cycle requirements of off-highway equipment, the EP Control utilizes an electronic module encapsulated in an aluminum enclosure and environmentally-sealed Metri-Pack® connectors to assure maximum protection from the elements. The EP Control is designed to resist Electromagnetic Interference (EMI) which could affect proper operation.

The EP Control offers maximum design and application flexibility with two different types of command input options and compatibility with both 12 and 24 Vdc power supplies. Typical input devices include joysticks (1-6 Vdc) and PLCs ($\pm 4-20$ mA).

For precise, repeatable operation, closed-loop current control is used to compensate for resistance and voltage changes of the proportional solenoids due to temperature variation. In the event of a power loss or loss of signal, the EP Control automatically returns the pump to neutral. Mechanical feedback of the swashplate position provides closed-loop control to maintain the selected displacement setting over a wide range of operating conditions. Solenoids have integral manual override actuators.



EP Control Features

- Robust, flexible electronic pump control
- Electronic module encapsulated for environmental protection
- Automotive style environmentally sealed Metri-Pack® connectors
- Closed-loop current control compensates for resistance change of the proportional solenoids due to temperature variations
- Return to neutral for loss of power or loss of command input signal
- Mechanical feedback of swashplate position for closed-loop control
- Two choices for command input signal
- Operates from 12 or 24 Vdc power supply
- Ease of installation
- Operating temperature range -40° to +85° C
- On-pump mounting for many installations
- External neutral adjustment
- Manual override capability
- Drive module qualification per SAE J1455, SAE J1113, CISPR 25
- External fuse (customer supplied): 3A

Electronic Module Qualification (Contact Eaton for Specific Levels)

- SAE J1455 - Recommended Environmental Practices for Electronic Equipment Design
 - Humidity/Temperature Extreme Cycling
 - Salt Spray
 - Splash & Immersion
 - Steam Cleaning/High Pressure Wash
 - Vibration
 - Mechanical Shock
 - Temperature Cycling
 - Load Dump Transients
 - Inductive Load Switching Transients
- SAE J1113 - Electromagnetic Susceptibility Measurement Procedures for Vehicle Components
 - EMI/EMC - Conducted & Radiated Immunity
- CISPR 25 - International Electrotechnical Commission "Limits and Methods of Measurement of Radio Disturbance Characteristics for the Protection of Receivers used on Board Vehicles"
 - EMI/EMC - Conducted & Radiated Emissions

EATON

Hydraulics

Electronic Proportional (EP) Control for Medium Duty 72400 Piston Pumps

The Electronic Proportional (EP) Control is ideal for a wide range of mobile and industrial applications where electrical control of pump displacement is desired. Eaton's robust design incorporates an electronic module, proportional solenoids and a valve assembly.

Pump displacement is controlled by an input command signal which is converted into proportional current output by the electronic module. The proportional solenoid-actuated valve assembly then converts the current output into proportional pump displacement.

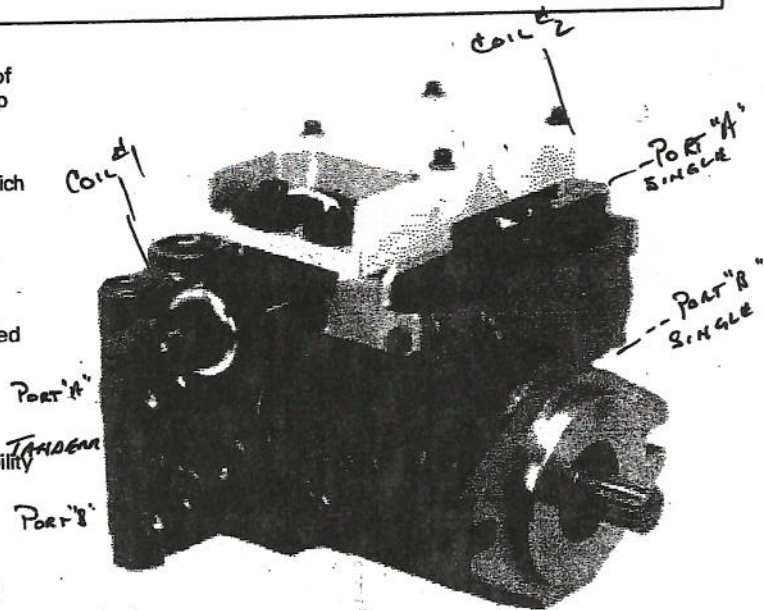
Designed to meet the rigorous duty cycle requirements of off-highway equipment, the EP Control utilizes an electronic module encapsulated in an aluminum enclosure and environmentally-sealed Metri-Pack® connectors to assure maximum protection from the elements. The EP Control is designed to resist Electromagnetic Interference (EMI) which could affect proper operation.

The EP Control offers maximum design and application flexibility with two different types of command input options and compatibility with both 12 and 24 Vdc power supplies. Typical input devices include joysticks (1-6 Vdc) and PLCs ($\pm 4-20$ mA).

For precise, repeatable operation, closed-loop current control is used to compensate for resistance and voltage changes of the proportional solenoids due to temperature variation. In the event of a power loss or loss of signal, the EP Control automatically returns the pump to neutral. Mechanical feedback of the swashplate position provides closed-loop control to maintain the selected displacement setting over a wide range of operating conditions. Solenoids have integral manual override actuators.

EP Control Features

- Robust, flexible electronic pump control
- Electronic module encapsulated for environmental protection
- Automotive style environmentally sealed Metri-Pack® connectors
- Closed-loop current control compensates for resistance change of the proportional solenoids due to temperature variations
- Return to neutral for loss of power or loss of command input signal
- Mechanical feedback of swashplate position for closed-loop control
- Two choices for command input signal
- Operates from 12 or 24 Vdc power supply
- Ease of installation
- Operating temperature range -40° to $+85^{\circ}$ C
- On-pump mounting for many installations
- External neutral adjustment
- Manual override capability
- Drive module qualification per SAE J1455, SAE J1113, CISPR 25
- External fuse (customer supplied): 3A



1/5/07

ENERGIZED - CEW

#1 COIL NEXT TO PRESSURE PORTS - "IN"
PRESSURE OUT PORT "A"

#2 COIL AWAY FROM PORTS - "OUT"

Electronic Module Qualification (Contact Eaton for Specific Levels)

- SAE J1455 - Recommended Environmental Practices for Electronic Equipment Design
 - Humidity/Temperature Extreme Cycling
 - Salt Spray
 - Splash & Immersion
 - Steam Cleaning/High Pressure Wash
 - Vibration
 - Mechanical Shock
 - Temperature Cycling
 - Load Dump Transients
 - Inductive Load Switching Transients
- SAE J1113 - Electromagnetic Susceptibility Measurement Procedures for Vehicle Components
 - EMI/EMC - Conducted & Radiated Immunity
- CISPR 25 - International Electrotechnical Commission "Limits and Methods of Measurement of Radio Disturbance Characteristics for the Protection of Receivers used on Board Vehicles"
 - EMI/EMC - Conducted & Radiated Emissions

14074

HEARTLAND FARMS

2/6/2014

4RSPH 65"LAH

PLUG #1

KAR-TECH ENCLOSURE

PLUG #1 PIN #			Belden 8619
1	Blue	Airhead Potentiometer Pin 2 Command Signal Junction 2	8619
2	Orange	Airhead Potentiometer Pin 3 Command Signal Junction 3	8619
3	Black	Airhead Controller Power Supply Junction 4	8619
4	Blue / White	Left Primary Potentiometer Pin 2 Command Signal Junction 6	8619
5	Green / White	Left Primary Potentiometer Pin 3 Command Signal Junction 7	8619
6	Black / White	Left - Right Primary Controller Power Supply Junction 8 - 12	8619
7	Blue / Black	Right Primary Potentiometer Pin 2 Command Signal Junction 10	8619
8	Red / Black	Right Primary Potentiometer Pin 3 Command Signal Junction 11	8619
9	Green	Secondary Potentiometer Pin 2 Command Signal Junction 14	8619
10	White / Black	Secondary Potentiometer Pin 3 Command Signal Junction 15	8619
11	Green / Black	Secondary Controller Power Supply Junction 16	8619
12	Black	0020 Kar-Tech Ground Junction 26 To Panel	P

PLUG #2

PLUG #2 PIN #			Belden 8619
1	Red / White	Right Primary Potentiometer Pin 1 To Junction 23	8619
2	Red	Left Primary Potentiometer Pin 1 To Junction 22	8619
3	White	Airhead Potentiometer Pin 1 To Junction 21	8619
4	Orange / Black	Secondary Potentiometer pin 1 To Junction 24	8619
5	Black / Red	Trash Fan Controller Power Supply Junction 20	8619
6	White / Red	Trash Fan Potentiometer Pin 1 Command Signal Junction 25	8619
7	Orange / Red	Trash Fan Potentiometer Pin 2 Command Signal Junction 18	8619
8	Blue / Red	Trash Fan Potentiometer Pin 3 Command Signal Junction 19	
9			
10			
11			
12			

PLUG #3

PLUG #3 PIN #			Belden 8468
1	Red	Airhead Junction 1 To Coil #1 - Pin "A"	8468
2	Green	Left Primary Junction 5 To Coil #1 - Pin "A"	8468
3	Black	Right Primary Junction 9 To Coil #1 - pin "A"	8468
4	White	Secondary Junction 13 To Coil #1 - Pin "A"	8468
5	Green / Black	Left Primary Coil #1 - Pin "B" - Junction 22	8468
6	Black / White	Right Primary Coil #1 - Pin "B" - Junction 23	8468
7	Red / Black	Airhead Coil #1 - Pin "B" - Junction 21	8468
8	White / Black	Secondary Coil #1 - Pin "B" - Junction 24	8468
9	Blue	Trash Fan Junction 17 To Coil #1 - Pin "A"	8468
10	Orange	Trash Fan Coil #1 - Pin "B" - Junction 25	8468
11			
12			

LEFT PRIMARY	1
RIGHT PRIMARY	2
AIR HEAD	3
SECONDARY	4
TRASH FAN	5

14074

HEARTLAND FARMS

2/6/2014

4RSPH-65LAH

PLUG 5

PIN #			COLUMN PLUG	
1	11	Red	To Red "POW" In Powerview Harness	12 (3)
2	12	Red	Power From Key Switch "ACC" To Radio	2 (3)
3	13	Red	Key Switch "IGN" To Ignition Terminals On 77007 Solenoids in Panel	P
4	502	Brown	Power From Turn Stat 502 To 507	P
5	104	White	Clutch Switch N.C. To Relay	P
14	059	Black	To Clutch Switch N.O. To 15 (5)	3 (2)
15	0015	Red	To XM Switch "COM" Pin #1 / N.O. Pin #3 On XM Red 15 To DTS-6505 Solenoid	
18	54	Brown	Right Turn Signal - Brown 54 On Machine 512 To 522	7 (2)
20	53	Brown	Left Turn Signal - Yellow 53 On Machine 513 To 523	8 (2)

PLUG #6

				Belden 8619
1	Black		Airhead Controller Power Supply Junction 4	8619
2	Blue		Airhead Potentiometer Pin 2 Command Signal Junction 2	8619
3	Orange		Airhead Potentiometer Pin 3 Command Signal Junction 3	8619
4	White		Airhead Potentiometer Pin 1 Command Signal Junction 21	8619
5	Black / White		Left / Right Primary Controller Power Supply Junction 8	8619
6	Red		Left Primary Potentiometer Pin 1 Command Signal Junction 22	8619
7	Blue / White		Left Primary Potentiometer Pin 2 Command Signal Junction 6	8619
8	Green / White		Left Primary Potentiometer Pin 3 Command Signal Junction 7	8619
9	Red / White		Right Primary Potentiometer Pin 1 Command Signal Junction 23	8619
10	Blue / Black		Right Primary Potentiometer Pin 2 Command Signal Junction 10	8619
11	Red / Black		Right Primary Potentiometer Pin 3 Command Signal Junction 11	8619
12	Green / Black		Secondary Controller Power Supply Junction 16	8619
13	Orange / Black		Secondary Potentiometer Pin 1 Command Signal Junction 24	8619
14	Green		Secondary Potentiometer Pin 2 Command Signal Junction 14	8619
15	White / Black		Secondary Potentiometer Pin 3 Command Signal Junction 15	8619
16	Black / Red		Trash Fan Controller Power Supply Junction 20	8619
17	White / Red		Trash Fan Potentiometer Pin 1 Command Signal Junction 25	8619
18	Orange / Red		Trash Fan Potentiometer Pin 2 Command Signal Junction 18	8619
19	Blue / Red		Trash Fan Potentiometer Pin 3 Command Signal Junction 19	8619
20				
21				
22				
23				
24				

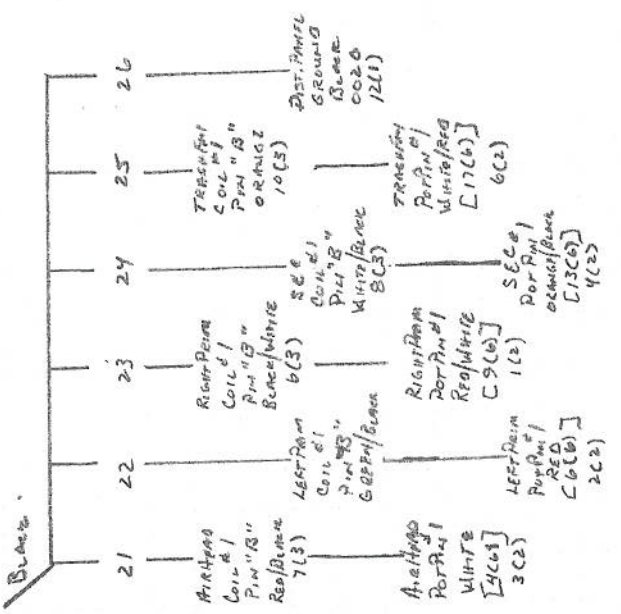
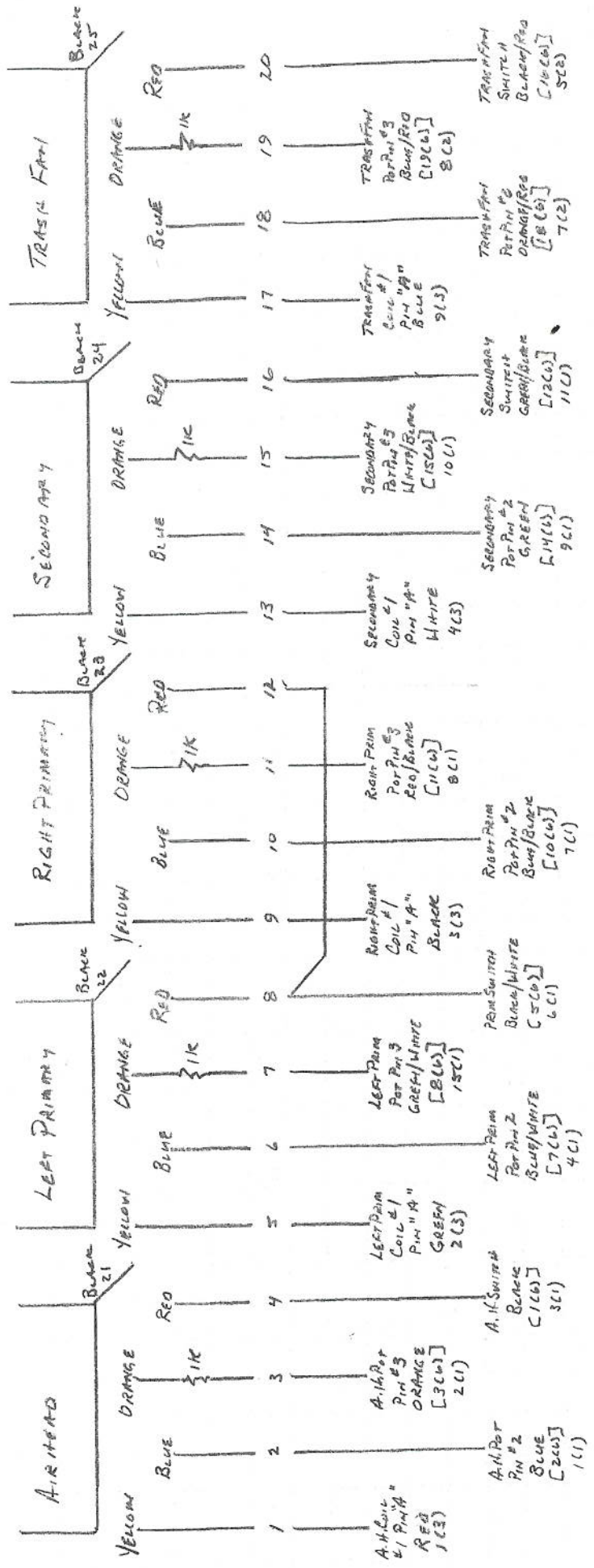
LARGE 3 PIN PLUG

PLUG #7

1	Orange	90 (H)	Main Power Reset Relay (N.O.) To Master Switch
2	Yellow	89 (H)	Main Power Reset Relay (N.O.) To Master Switch
3	Black	0012 (H)	CB 7 To Hi / Lo Switch

PLUG #8

PIN #1	Red	1	Auxillary Power Outlet #3 to Greentronics Rite Height Monitor	P
2	Black	001	Greentronics Rit Height -VBATT To Panel Ground	P
3	Red	01	Auxillary Power Outlet #5 To Greentronics Scale +VBATT	P
4	Black	0001	Greentronics Scale -VBATT To Panel Ground	P
5	Black	0015	Panel Ground To DS115	P
6	Black	00015	DS115 To Height Controller Auxillary Panel Pin 10 (To TGA20 In Armrest)	P



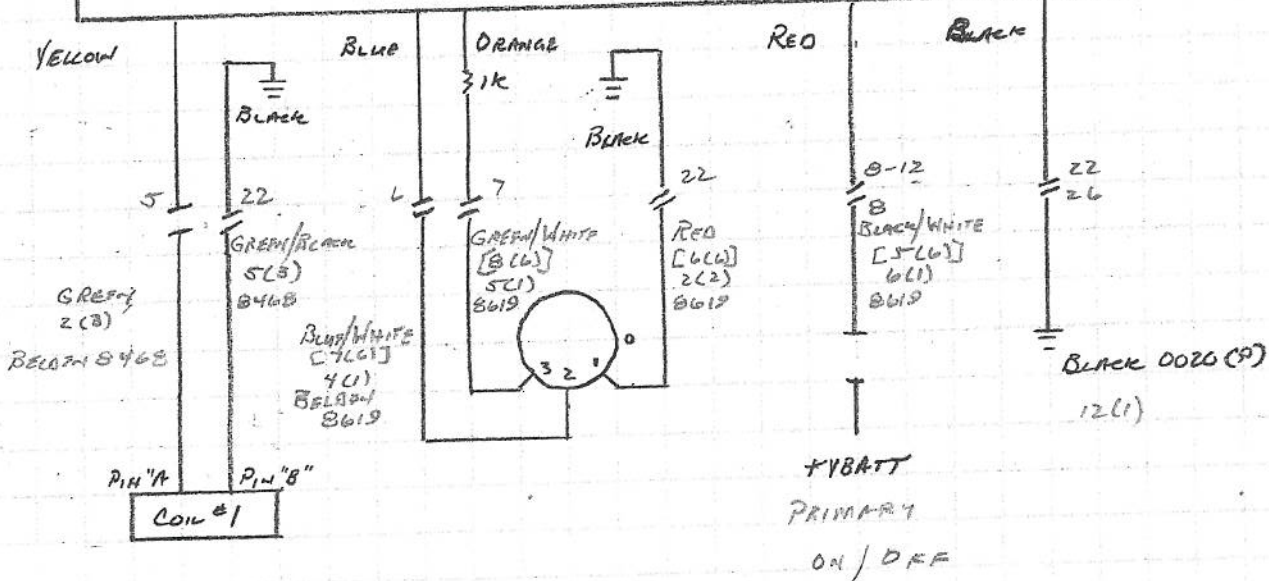
POTENTIOMETER TO KAR-TECH CONTROL PANEL
 KAR-TECH CONTROL TO PANEL

KAR-TECH VOLTAGE OUTPUT	FULL	1/2	OFF
Yellow	7.6	4.0	0.0
Blue	4.4	2.1	0.0
Orange	4.9	4.9	0.0
Red	12.0	12.0	0.0

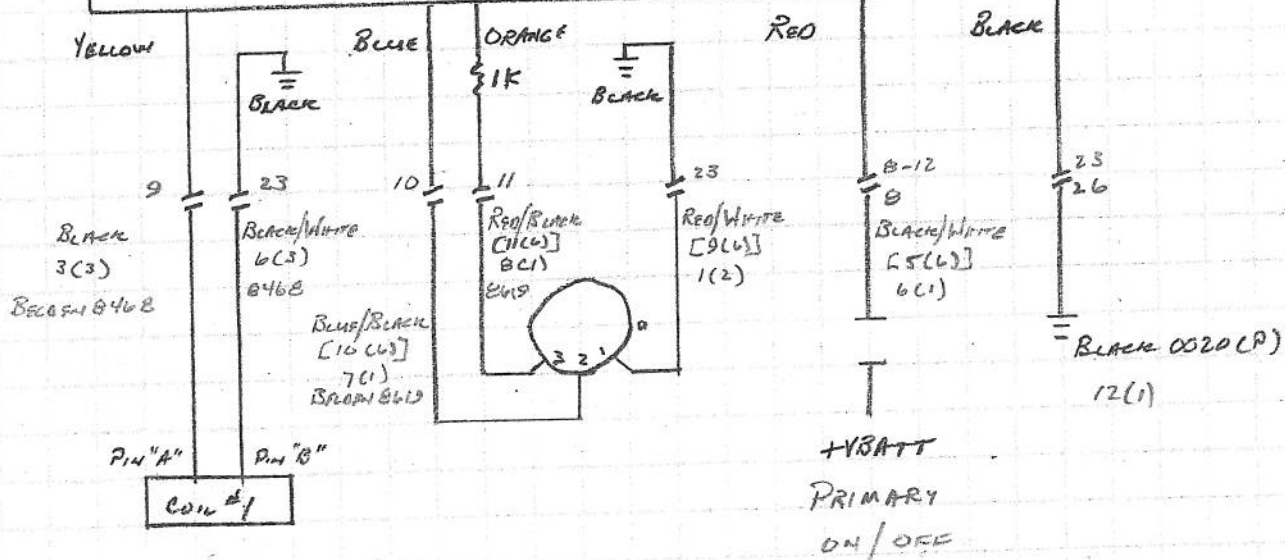
AIR HEAD TRASH FAN - 8" CAROL
 LEFT PRIMARY RIGHT PRIMARY SECONDARY 2000 RPM

KAA-TECH 210222A
 CCH ROTATION
 LEFT PRIMARY

2/6/14
 14074
 HEARTLAND FARMS
 YRSA#65CAT



RIGHT PRIMARY



KAR-TECH 210222A

CCW ROTATION

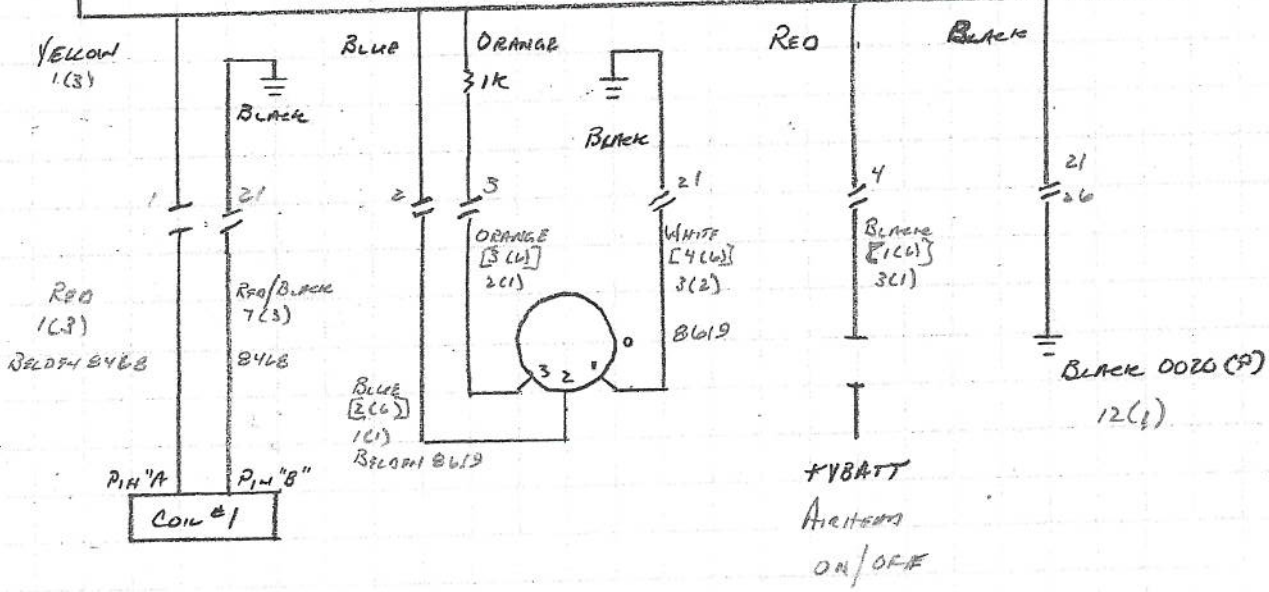
Air Horn

2/6/14

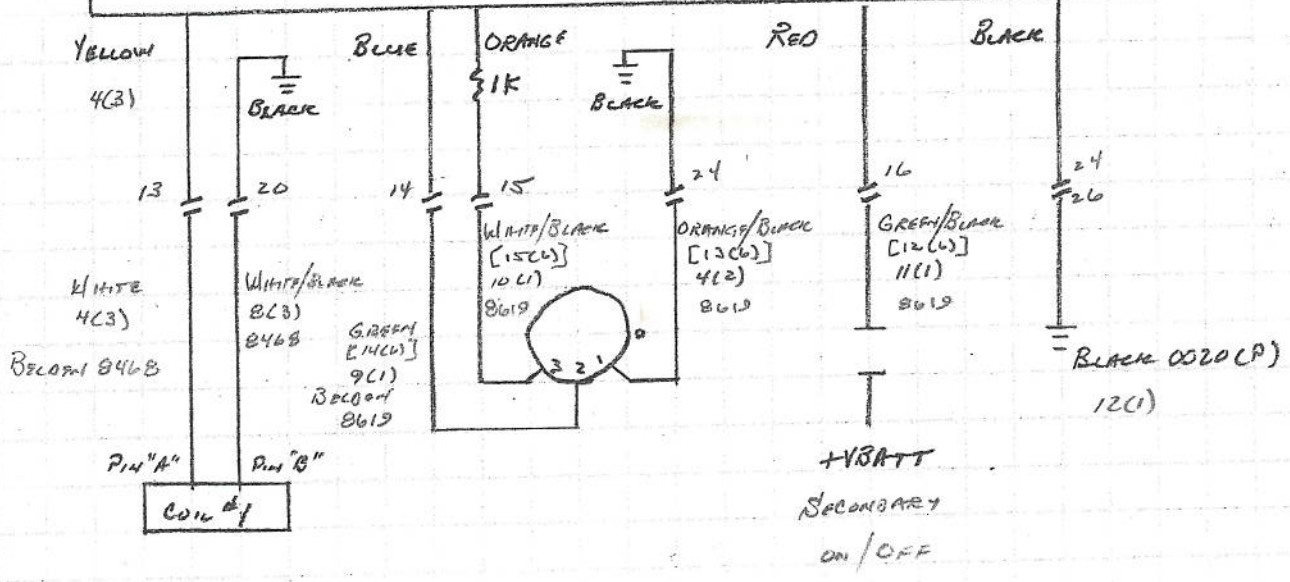
14094

HAWAIIAN FORMS

4RSPK65CAL



SECONDARY

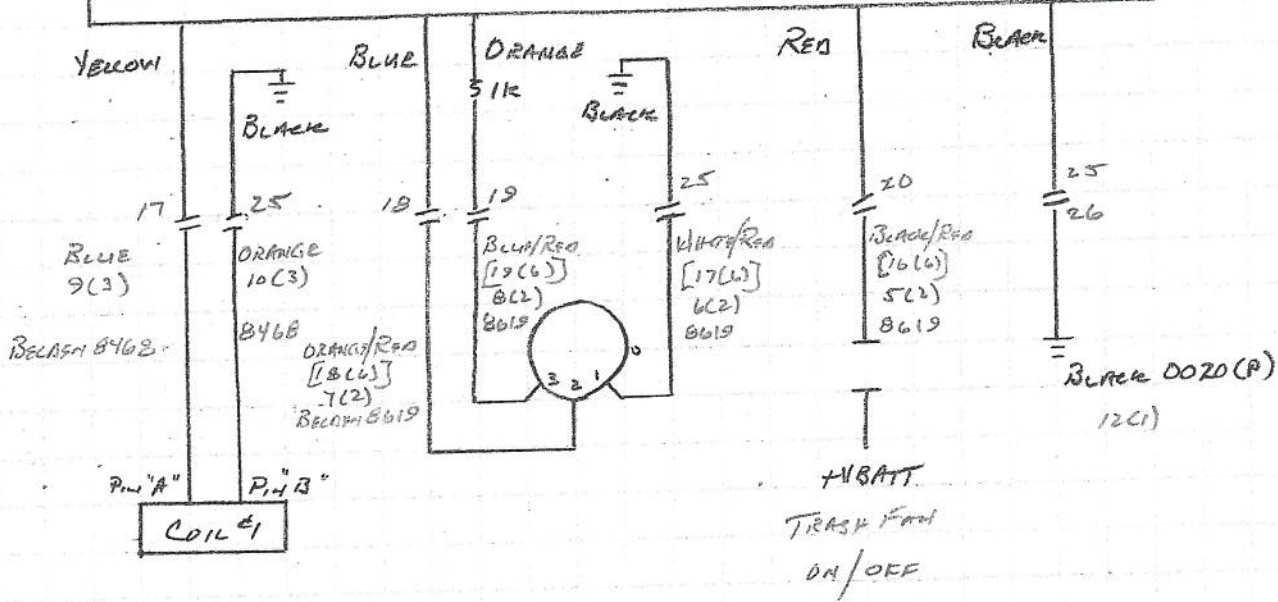


KAM-TECH 210222A

CCW ROTATION

TRASH FAN

2101
414074
HEARTLAND FILMS
4RSP#6SLAH



A. H. FAN



FILTER WARN



LOW

HYDRAULIC

OIL



GROUND DRIVE

Hi RANGE



Lo RANGE

GROUND

DRIVE

4X4



4X2

FUEL PUMP



FLASHERS



PARKING BRAKE



OFF

BRAKE



LIGHTS



LEFT TURN

LIGHT



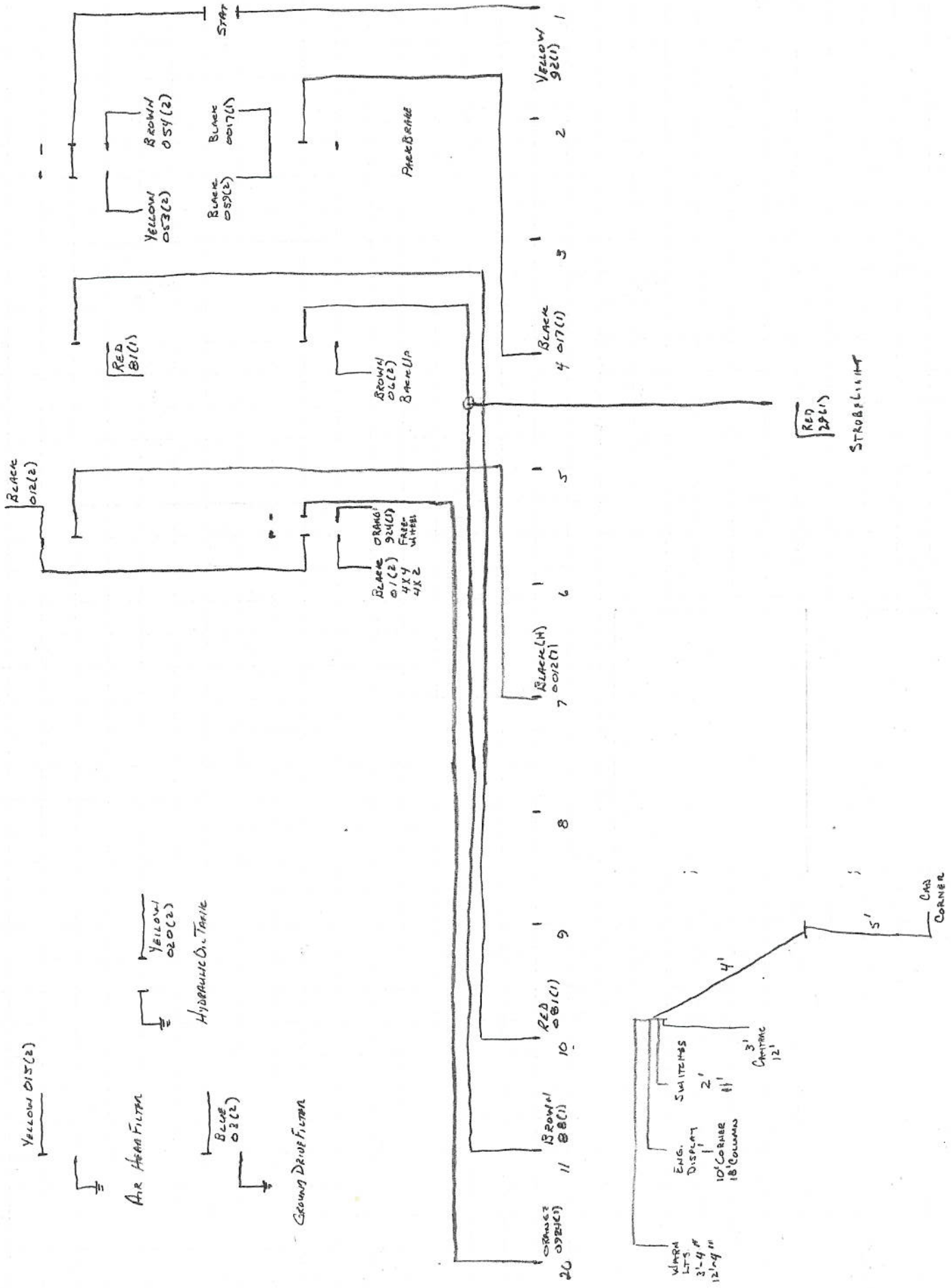
STROBE

LIGHT

FLASHERS

FUEL PUMP

H/L RANGE



YELLOW DIS(2)



AIR AREA FILTER

BLUE 02(2)



GROUND DRIVE FILTER

YELLOW 020(2)



HYDRAULIC Dr. TANK

YELLOW 053(2)

BLACK 0017(1)

BLACK 0017(1)

RED B(1)

BLACK 01(2) 24(1) 4X4 FUSE WHEEL 4X2

BROWN 01(2) BARE UP

PHRE BONE

YELLOW 02(1)

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

RED 29(1)

STROBE LIGHT

SWITCHES

ENG. Display

VIBRA LITS

2'

10' CORNER 18' COLUMNS

3-4" 12' x 9"

3'

CHAIRING 12'

4'

5'

CORNER

FOOT PEDAL SWITCHES

CENTERING

Auto Boom

SECONDARY

STEERING

REVERSING

LEFT

RIGHT

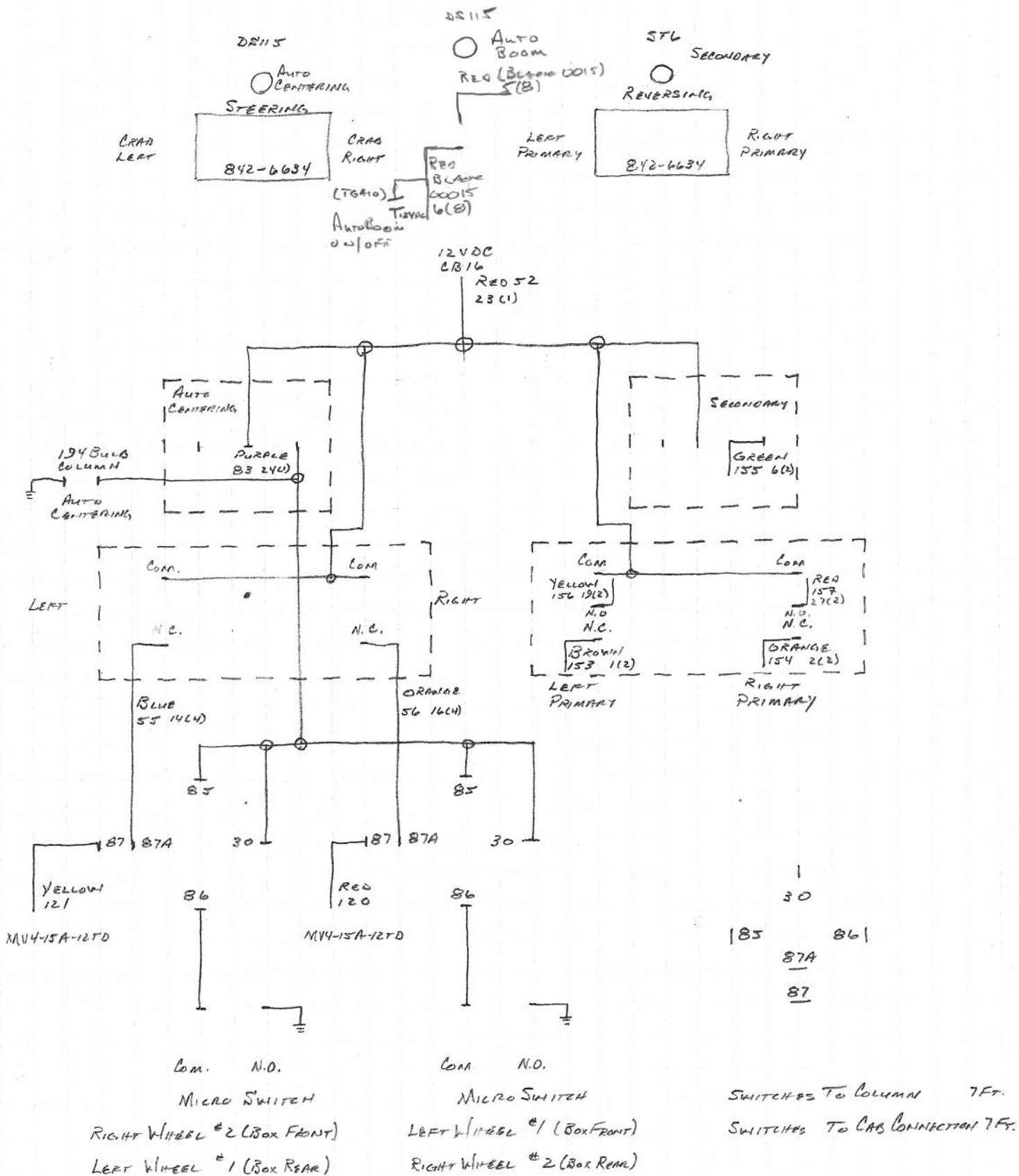
Lt PRIM

Rt PRIM

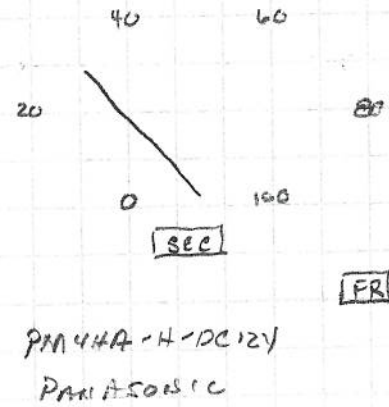
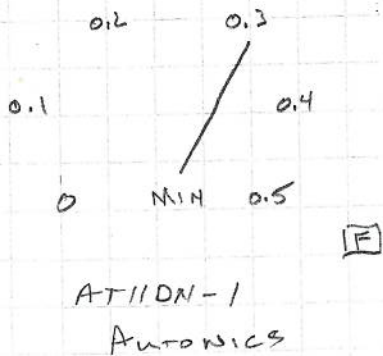
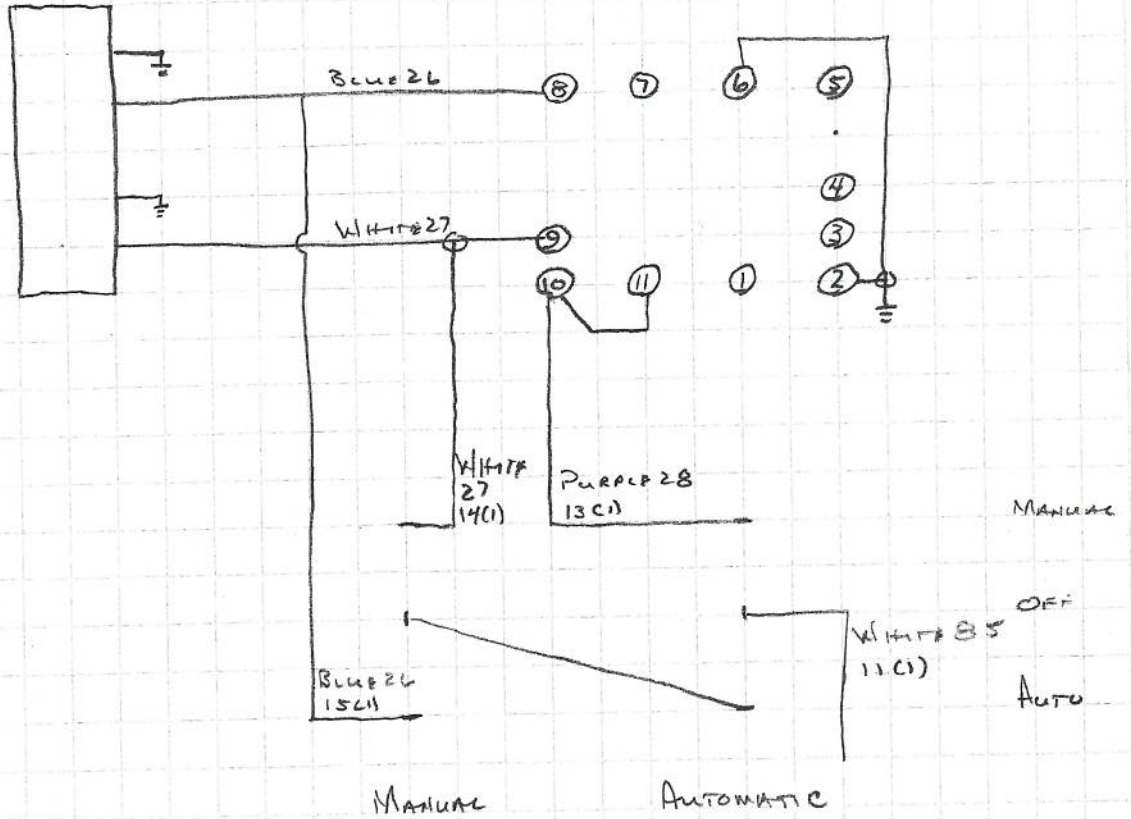
STEERING COLUMN

CENTERING

FOOT PEDAL SWITCHES



AIR HEAD CLEANER



INSTALLATION INSTRUCTIONS DIGITAL TEMPERATURE GAUGES


2650-1237-00

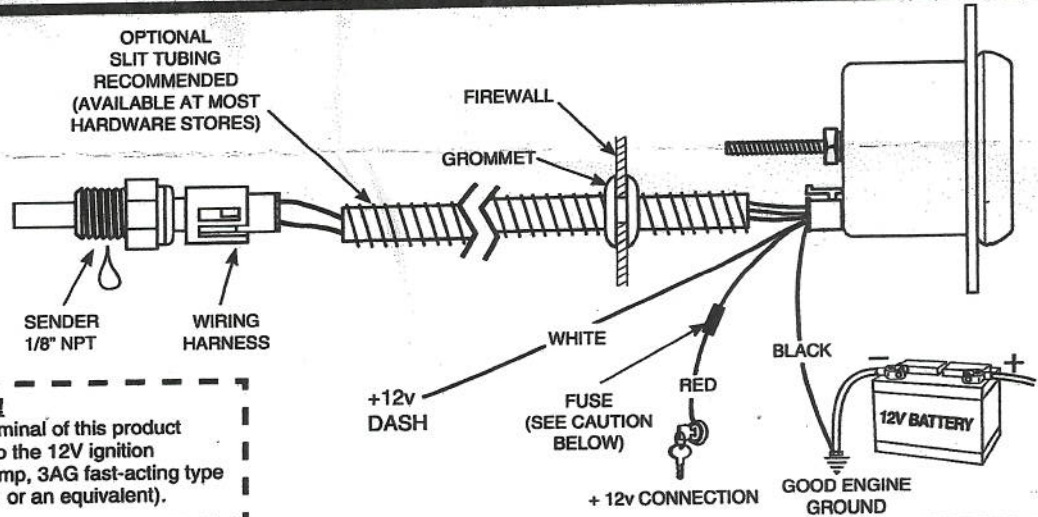


QUESTIONS ?

If after completely reading these instructions you have questions regarding the operation or installation of your instrument(s), please contact Auto Meter Technical Service at 815-899-0801.
You may also email us at service@autometer.com.

Additional information can also be found at <http://www.autometer.com>

 **USE TEFLON SEALING TAPE OR SEALING COMPOUND ON PIPE THREADS**



CAUTION!
As a safety precaution, the +12V terminal of this product should be fused before connecting to the 12V ignition switch. We recommend using a 1 Amp, 3AG fast-acting type cartridge fuse (Littlefuse® # 312 001 or an equivalent).

Installation

NOTE: Some late model vehicles use electronic sensors in their pressure and temperature senders for engine control functions. Before removing the original sender, we recommend that you contact your automotive dealer to be sure no critical functions will be disrupted.

1. Check that you have all parts required for installation, and the engine is cool.
2. Disconnect the negative (-) battery cable.
3. Gauge mounts in a 2-1/16" hole. Use supplied brackets and nuts to secure gauge to dash.
4. Drill 1" diameter hole where wires pass through sheet metal (such as firewall and install rubber grommet provided. (Grommet will require slit.)
5. Connect the white wire to dash lighting or switchable 12v light source, the red wire to switched +12V source and the black wire to ground. (see diagram for details) Digital display will dim when power is applied to the white wire.
6. Install temperature sender.
 - A. Water Temp: Install temperature sender.

PRIMARY	METER	
PIN 1 RED 21	RED	
2 BLACK 20	BLACK	pter
3 GREEN 425	GRAY	uate
4 GREEN 437	VIOLET	
SENSOR		
PIN A GRAY	GREEN 425	size grease
B VIOLET	GREEN 437	g harness.
SECONDARY		
PIN 1 RED 21	METER	inks are
2 BLACK 20	RED	air.
3 YELLOW 752	BLACK	
4 YELLOW 753	GRAY	e.
SENSOR		
PIN A GRAY	PURPLE	ghly after use.
B VIOLET	YELLOW 752	
	YELLOW 753	der. If no

Power-Up

When power is applied to the gauge, the display will light up with all eights immediately followed by the gauge firmware version. After the firmware version is momentarily displayed, the gauge will begin normal operation and display real time sender readings.

SERVICE

For service send your product to Auto Meter in a well packed shipping carton. Please include a note explaining what the problem is along with your phone number. Please specify when you need the product back. If you need it back immediately mark the outside of the box "RUSH REPAIR," and Auto Meter will service product within two days after receiving it. (\$10.00 charge will be added to the cost of "RUSH REPAIR.") If you are sending product back for Warranty adjustment, you must include a copy (or original) of your sales receipt from the place of purchase.

12 MONTH LIMITED WARRANTY

Auto Meter Products, Inc. warrants to the consumer that all Auto Meter High Performance products will be free from defects in material and workmanship for a period of twelve (12) months from date of the original purchase. Products that fail within this 12 month warranty period will be repaired or replaced at Auto Meter's option to the consumer, when it is determined by Auto Meter Products, Inc. that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of parts in the Auto Meter instruments. In no event shall this warranty exceed the original purchase price of the product. Auto Meter Products, Inc. is not responsible for special, incidental or consequential damages or costs incurred due to the failure of this product. Warranty claims to Auto Meter must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser of product and is non-transferable. All implied warranties shall be limited in duration to the said 12 month warranty period. Breaking the instrument seal, improper use or installation, accident, water damage, abuse, unauthorized repairs or alterations voids this warranty. Auto Meter Products, Inc. disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured by Auto Meter.

FOR SERVICE SEND TO: AUTO METER PRODUCTS, INC. 413 W. Elm St., Sycamore, IL 60178 USA (815) 899-0801

Email us at service@autometer.com

<http://www.autometer.com>